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ABSTRACT

This paper is a meta review of review articles on child behavior therapy published in major behavioral journals from 1981 through June 1986. Child behavior therapy is described as a treatment which emphasizes operationally defined interventions, objective measures of outcome, the experimental analysis of behavior, and an idiographic approach. Three major content areas are covered in the review. The first area focuses on target behaviors, diagnostic categories, and clinical populations and contains sections on mental retardation, attention deficit disorder, conduct disorder, developmental disabilities, anxiety disorders, eating disorders, other disorders, parent-child problems, and gifted students. The second section examines mediators of behavioral interventions with sections on parents, peers, self-management, and professionals. The final content area involves clinical and research procedures in child behavior therapy. The paper ends with observations on the marketing of child behavior therapy and conclusions and recommendations for future directions. An addendum to the paper presents tables listing studies which have employed various persons as the agents of change in child behavior therapy: (1) parents or teachers; (2) child peers; or (3) the child himself. A seven-page reference list is included. (Author/NB)

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***Abstract***

*Child behavior therapy emphasizes operationally defined interventions, objective measures of outcome, the experimental analysis of behavior, and an idiographic approach. The present paper is a meta review of the review articles on child behavior therapy which were published in the major behavioral journals from 1981 through the first half of 1986. The content areas covered were (a) target behaviors, diagnostic categories, and clinical populations, (b) the mediators of intervention with special emphasis placed on parents, peers, and child patients, and (c) clinical and research procedures in child behavior therapy. The paper ends with observations on the marketing of child behavior therapy and recommendations for future directions.*

# Research Findings in the Behavioral Treatment of Children

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The ***behavioral treatment of children*** identifies a particular perspective on clinical child psychology. This perspective has several emphases. First, interventions are *operationally defined*. The child therapist carries out treatments which can be clearly described, are observable by others, and are maximally teachable to others. Second, this approach promotes using *objective measures of outcome* with special emphasis on direct observation of the child's behavior. When direct observation is not feasible, emphasis is placed on using measures with demonstrated reliability and high face validity. Third, the perspective emphasizes the value of performing *experimental analyses of behavior* for both assessment and intervention purposes. Fourth, the perspective promotes the *intensive study of single subjects* (i.e., an idiographic approach) *and replication* of treatment effects within and across sets of subjects in order to demonstrate reliable treatment effects.

A given treatment usually consists of a combination of several components. These components may be organized under four broad categories of operations: (1) setting events, (2) cues and prods, (3) primary behaviors, and (4) consequences and feedback.

***Setting events*** include (a) deprivation and satiation (cf. survival), (b) aversive and pleasant stimulation (cf. safety), (c) rejection and acceptance (cf. belonging), (d) restraints and choices (cf. freedom), (e) ambiguity and clarity (cf. meaning), and (f) inhibitory and excitatory drugs/substances. Although child behavior therapists have rarely included setting events as an explicit part of an intervention package, setting events are always relevant to understanding or modifying a child's behavior (cf. Wahler & Fox, 1981; Wahler & Graves, 1983). Among other things, setting events may alter the thresholds for stimuli which immediately precede or follow a behavior and they may alter a behavior directly without any concurrent changes in those environmental stimuli which immediately precede or follow the behavior.

***Cues and prods*** (i.e., environmental stimuli which immediately precede a behavior) may include (a) choosing and defining a target behavior, (b) presenting an immediate cue (discriminative stimulus) or prod (i.e., unconditional or conditional stimulus), (c) setting a goal (directional) or objective (performance standards for consequation), (d) writing a performance contract, (d) choosing a positive or negative reinforcer, (e) choosing a token reinforcer, and (f) providing a model.

***Primary behaviors*** include operations which can only be carried out by the target child; included within this category are (a) positive practice or rehearsal and (b) withholding a response or inactivity.

***Consequences and feedback*** include (a) observation of, monitoring, feedback from, recording, or graphing a target behavior, (b) evaluation of the behavior in terms of some criterion, (c) administering a positive or removing a negative reinforcer, (d) administering a negative or removing a positive reinforcer, and (e) schedules of consequences or feedback.

The present paper reviews those reviews of the literature on child behavior therapy published from 1981 through mid 1986 in the following journals: *Advances in Behaviour Research and Therapy, Behavior Modification, Behavior Therapy, Behaviour Research and Therapy, Child and Family Behavior Therapy, Journal of Applied Behavior Analysis, Journal of Behavior Therapy and Experimental Psychiatry*, and *Psychological Bulletin*. This paper may be viewed as a ***meta review!***

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## Target Behaviors, Diagnostic Categories, and Defined Populations

### *Mental Retardation*

Although behavioral journals carry many articles in which persons with developmental disabilities have served as subjects, only two review articles appeared (in the population of articles defined above) which dealt primarily with problems presented by retarded individuals.

***Self-injurious behavior.*** Favell, Azrin, Baumeister, Carr, Dorsey, Forehand, Foxx, Lovaas, Rincover, Risley, Romanczyk, Russo, Schroeder, and Solnick (1982) served on an Association for Advancement of Behavior Therapy task force to study the most effective procedures for treating self-injury in the retarded. The task force defined self-injury as striking oneself (e.g., slapping face or banging head); biting any part of one's own body; self-inflicted pinching, scratching, poking, or pulling body parts (e.g., poking an eye or pulling hair); self-induced repeated vomiting or vomiting and reingesting food (i.e., rumination); and consuming non-nutritious material.

Favell et al. (1982) concluded that the specific etiology of self-injurious behavior is not clearly determined in most cases. They identified three broad approaches to the understanding and treatment of self-injurious behavior: (a) medical, (b) psychodynamic, and (c) behavioral. They concluded that even when medical treatment is helpful in regulating self-injurious behavior, "medical treatment may not be sufficient" (p. 533). Psychodynamic approaches have not demonstrated their usefulness in treating the problem. In contrast, substantial data exist on the ***value of an array of behavioral approaches***: differential reinforcement of other/incompatible behaviors; changing antecedent stimulus conditions; withholding or removing positive reinforcers for self-injury (e.g., extinction and time out); and (i.e., overcorrection, aversive electrical stimulation, and administering other punishers). Summarizing across their findings, the members of the task force stated, "Although individual behavioral treatment procedures vary in the quality and quantity of scientific evidence supporting their effectiveness, these combine into a composite behavioral treatment strategy which is well substantiated" (p. 541).

The Favell report included many recommendations regarding procedures to be followed when treating self-injurious behavior and identified a few areas which are in particular need of continuing investigation: the biological and environmental causes of the problem; generalization of treatment effects across settings; maintenance of treatment effects across time and in the absence of contrived interventions.

***Self-stimulation.*** Less than one year following the publication of the Favell report appeared a review by Schrader, Shaull, and Elmore (1983) on the treatment of self-stimulation in developmentally disabled persons. Their review covered 38 studies published from 1962 to 1981 and it explicitly excluded studies on the "...treatment of pica, rumination, and self-injurious behavior that may have a self-stimulatory component" (p. 269). Their major findings were as follows: (a) The major methods of treatment have been reinforcement programs (particularly differential reinforcement of other/incompatible behavior), contingent withdrawal of reinforcement, and punishment including time out, overcorrection, and physical restraint. (b) Most published studies include from one to a few subjects: "In over 95% of the reviewed studies, less than five subjects were employed" (p. 275). (c) Most articles include too little information about their subjects, including the extent to which self-stimulation interferes with normal activities. (d) Existing publications contain too little information about what happens to other behaviors in the child when self-stimulation is targeted. (e) A majority of the interventions were carried out by parents, teachers, paraprofessionals, or other staff with limited education and training in the technical aspects of behavior modification. (f) Most investigators failed to gather data outside the treatment setting or after the programmed intervention ceased. (g) Studies on self-stimulation have included measures of inter-observer agreement. (h) Most studies have focused primarily on reducing the self-stimulation rather than teaching the child more adaptive behaviors.

Schrader et al. (1983) made several suggestions for the behavioral treatment of self-stimulation and for future research on this problem. Their suggestions are consistent with and complement those of Favell et al. (1982).

***Attention Deficit Disorder***

Attention Deficit Disorder with Hyperactivity is one of the most pervasive psychological disorders of childhood, but no review appeared in the population of articles we sampled for the present paper; however, a special issue of the *Clinical Psychology Review* recently focused on Attention Deficit Disorder (Abikoff, 1985; Edelbrock & Rancurello, 1985; Gadow, 1985; Loney, 1985; Whalen & Henker, 1985). Two of the articles in this special issue were of particular relevance to the present paper.

First, Abikoff (1985) reviewed studies which evaluated the effects of ***cognitive training interventions*** on inattentive, impulsive, restless children. He organized the published findings according to type of outcome measure: cognitive, academic, and behavioral. In contrast to the assumption that

"cognitive training" changes how children think, Abikoff emphasized that investigators have failed to determine whether their subjects have actually altered their self-statements following cognitive training. The most commonly used measures of cognitive functioning have been psychological tests; Abikoff concluded that the impact of cognitive training procedures on cognitive performance as measured by such tests has been inconsistent.

The combined use of psychostimulants and cognitive behavioral interventions has also failed to demonstrate a consistent effect from the cognitive components. In reviewing the evidence for an effect on academic performance, he suggested that "...direct remedial tutoring alone may be more effective than a cognitive training approach in facilitating academic achievement in academically backward hyperactive children" (pp. 502-503), but he did indicate that some evidence existed that some of the procedures reduce careless errors and facilitate the child's using academic skills which are already in his/her repertoire. Also he noted that ***intervention packages which included self-reinforcement produced the most gains*** in academic performance. A problem in most studies reviewed by Abikoff were that they used a relatively brief period of training; he warned, "Such brevity hardly constitutes a meaningful test of treatment efficacy" (p. 503). As an intervention on "behavior" Abikoff concluded that cognitive training with hyperactive children has generally failed to produce improvement in social problem-solving, in behavior, or in general adjustment. Procedures which seemed to hold the most promise were stress inoculation and self-reinforcement. Abikoff encouraged future investigators to pay greater attention to individual differences in hyperactive children and to developing better methods for assessing children's problem-solving skills.

Gadow (1985) prepared a review of 16 studies which compared the effects of medication and behavioral interventions on the academic performance of children diagnosed as "Attention Deficit Disorder with Hyperactivity." He noted that there was great diversity among the behavioral interventions, measures, and settings used in the studies he reviewed. Gadow concluded that "academically oriented behavioral interventions" (e.g., token reinforcement for quantity or quality of academic productivity or response cost for errors) were consistently superior to psychostimulants alone, and that there was only limited evidence to support the proposition that drugs greatly increase the benefits of the behavioral interventions.

***Conduct Disorder***

Next to Attention Deficit Disorder with Hyperactivity,

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Conduct Disorder probably accounts for the most referrals for outpatient psychological services to children. Our search for relevant review articles identified five.

Although they were not dealing with behavioral interventions, Loeber and Dishion (1983) reviewed prediction studies on delinquency. They identified the following variables as most helpful in predicting delinquency (ordered in decreasing predictive power): (a) composit measures of parental techniques for managing the family, (b) problem behaviors in the child, (c) stealing, lying, or truancy, (d) criminality or antisocial behavior of family members, (e) poor educational achievement, (f) single measures of parental techniques for managing the family, (g) separation from parents, and (h) lower socioeconomic status. Investigators of behavioral approaches to preventing Conduct Disorder will benefit from applying the predictors which were identified by Loeber and Dishion.

McIntyre, Bornstein, Isaacs, Woody, Bornstein, Clucas, and Long (1983) reviewed 43 studies which reported having used direct observation of conduct-disordered children's behavior in the natural environment. A majority of these studies (53%) appeared in just two journals, *Behavior Therapy* and *Journal of Applied Behavior Analysis*. Investigators had used event recording in 60% of the studies and time sampling in 28% for recording both child and parent behaviors. The most commonly used behavioral categories for observational codes were *compliance/noncompliance* (noncompliance, compliance, opposition), *negative verbalizations* (whining, yelling, crying, negative commands, disapproval, negativism, and teasing), *negative physical behavior* ("physical negative" and destructiveness), and *miscellaneous* (ignore and high rate). Among the greater problems these investigators reported were the large number of different observational categories (more than 170) which make comparison across studies difficult; a tendency for authors to combine across behavioral categories, summarize, or incompletely report their observational data; failure to report actual times and settings of observational sessions; inadequate descriptions of the subjects; and a tendency of investigators to restrict the natural environment in some way during the observational sessions rather than allowing the child and family to be free to behave in their typical manner.

While they were not dealing with Conduct Disorder per se, Fehrenbach and Thelen (1982) reviewed research and theoretical *models of aggressive disorders*. Their paper was not limited to but did include work regarding children. They reported an array of interventions as having some demonstrated value in decelerating aggressive behavior including extinction, time out, differential reinforcement of other behavior, response cost,

punishment (i.e., contingent application of negative reinforcers), and overcorrection. Among procedures which have been used to strengthen positive behaviors designed to replace aggressive responses were contingency contracting , comprehensive retraining programs, and an array of "social learning" techniques. Fehrenbach and Thelen encourage (a) the use of intensive studies of single subjects at the present stage of research development on aggressive disorders, (b) focusing on generalization from the treatment setting to the natural environment, (c) controlling for the effects of being assessed or observed, and (d) assessing the maintenance of treatment effects.

Feldman (1983) did review the literature on behavioral treatments of "young offenders." His basic conclusions were that the traditional "talking therapies" don't seem to help juvenile offenders; behavioral approaches show promise but are not a final answer to the treatment of Conduct Disorder; training persons who work and live with Conduct Disorder children in the natural environment is likely to be helpful (such persons include parents, family members, teachers, peers, police, and probation officers); early identification and intervention aimed at prevention is essential; and researchers should "...draw on several data-based areas of psychology rather than behavior therapy alone" (p. 48).

Although they were not responding directly to Feldman's final suggestion above, Griest and Wells (1983) did propose a model which would expand child behavior therapy to ***behavioral family therapy***. Given the importance of family variables in predicting delinquency (cf. Loeber & Dishion, 1983), investigators of Conduct Disorder and its treatment would seem compelled to adopt a "family" orientation. Griest and Wells suggest that special attention be paid to parents' conceptions and perceptions of their children, the psychological status of parents (e.g., depression and anxiety), the nature of the parents' marital status, and social/community variables. Griest and Wells affirmed the many advances which child behavior therapists have fostered in the understanding and treatment of Conduct Disorder, but they also underlined that significant gaps exist in the available data as well as behavioral models.

### *Anxiety Disorders of Childhood*

***Avoidant Disorder of Childhood.*** Although DSM-III (American Psychiatric Association, 1980) has not been in use long enough to have impacted many of the reviews covered in the present article, two of the articles which we have included seem to fit most closely with the diagnostic category, Avoidant Disorder of Childhood. A closely related diagnostic category is ***Social Phobia***.

Wanlass and Prinz (1982) reviewed 42 controlled studies on the treatment of childhood ***social isolation***. They concluded that many procedures have produced positive outcomes and they specifically identified operant procedures, structuring of activity and play material, modeling, coaching, peer groups, flooding, and combinations of the preceding. Obviously most of these treatment approaches have been heavily influenced by child behavior therapists. The major problems they identified were failure to determine whether treatment effects were maintained and heterogeneity in subjects within and across studies. They recommended that clinical samples be more carefully defined, that a distinction be made between (a) rejection by peers and (b) low interaction with peers, and the specific problem behaviors in the socially isolated child be related to specific intervention packages.

Conger and Keane (1981) wrote a review somewhat similar to that of Wanlass and Prinz; however, Conger and Keane limited their focus to social skills interventions with socially isolated children. They covered filmed models, live models, peers, contingency management, coaching/instructional techniques, and problem-solving approaches. They concluded that such procedures are often but not consistently helpful. They also questioned whether investing much time and energy investigating the effects of social skills training on children who are deficient in social skills is as socially valid as exploring ways to improve the social behavior of aggressive-disruptive children who are actively rejected by their peers.

Our search failed to identify any reviews which dealt with constellations which could reasonably be considered ***Separation Anxiety Disorder*** or ***Overanxious Disorder***; however, the paper by King, Hamilton, and Murphy (1983) on children's maladaptive fears could be construed as dealing with ***Simple Phobia*** in children. They focused on preventing children's maladaptive fears. They listed very limited empirical data from home- and school-based interventions, but critiqued 13 studies which focused on health care settings such as the dentist's office and elective surgery in a hospital. Interventions have included visits to the health care setting prior to the time the child will actually undergo the intrusive procedures, filmed models, desensitization, social reinforcement for cooperative behavior, exposure to novel stimuli in the health care setting, and training in coping strategies (e.g., relaxation training, guided imagery, and comforting self-talk). Procedures such as the preceding ones seem to have produced positive changes in many children, but the effects have varied from study to study and across children. In contrast, the common procedures of explanations and reassurances used by parents and others don't seem to prevent children from developing phobic reactions.

### *Other Disorders of Childhood*

***Elective Mutism*** was the only DSM-III diagnostic category listed under "Other Disorders of Childhood" which was covered by a review in the population we sampled. Cunningham, Cataldo, Mallion, and Keyes (1983) reviewed those studies which had applied behavioral treatments within intensive designs. They covered 33 studies which included a total of 41 electively mute children. The various treatment procedures used across these cases were shaping and reinforcement, stimulus fading, escape and avoidance training, time out, response cost, and overcorrection. None of these procedures seemed to have been esablished as clearly superior to any of the others. Treated children either acquired spontaneous speech in settings where speech was absent prior to intervention (57% of the cases) or at least speech occurred in response to prompts or questions (43% of the cases). These gains were maintained or surpassed in 97% of the cases for whom follow-up data were reported. Cunningham et al. concluded that there is little difference in the cost effectiveness of the interventions which have been tested and that there is no apparent relationship between severity of symptoms and response to treatment. They encouraged investigators to conduct controlled studies to identify more clearly what treatment components will be most helpful with electively mute children.

We failed to identify any reviews in the recent behavioral journals dealing with ***Reactive Attachment Disorder of Infancy***, ***Schizoid Disorder of Childhood***, ***Oppositional Disorder***, or ***Identity Disorder*** (a diagnosis which would not normally be made until adolescence).

### *Eating Disorders*

Since ***Anorexia Nervosa*** and ***Bulimia*** usually occur after the onset of adolescence, reviews on them would not fit the parameters of the present paper. ***Pica*** and ***Rumination Disorder of Infancy*** would fit; however, no appropriate reviews were found.

### *Stereotyped Movement Disorders*

Turpin (1983) prepared an extensive review of the behavioral treatment of ***Tic Disorders***. His review covers definitions, prevalence, prognosis, models of etiology (psychodynamic, biological, and psychological), and treatment. His review of outcome studies employing "psychotherapy" led him to conclude that psychotherapy is of limited value in treating tics. On the other hand his review of drug treatment in managing tics, particularly ***Tourette's Disorder***, suggested a positive role for psychopharmacology in helping to control the more serious tic disorders. The bulk of Turpin's paper that deals with treatment

focuses on behavioral interventions including ***massed practice, operant conditioning, self-monitoring and feedback, habit-reversal and response prevention***, and ***anxiety management***. Given the reliance on single-subject methodologies in the studies which he reviewed, Turpin concluded, "It is not possible to reach any firm conclusions regarding the efficacy of behavioural treatments for tics" (p. 230), but drug studies have consistently reported improvements in the range of 68 to 76% across a large number of patients. He did encourage future researchers to carefully diagnose and describe their subjects so that there are clear distinctions drawn between the different type of tic disorders (e.g., ***Transient Tic Disorder, Chronic Motor Tic Disorder***, and ***Tourette's Disorder***), to use a broad range of outcome measures across the patient's routine environment, to conduct long-term follow-ups, to employ between-groups and factorial designs, and to compare the more promising interventions with "placebo" control groups. Finally, he criticized past investigators for failing to develop adequate theoretical models of tic disorder. He suggested a model which incorporated "...the interactive effects of both biological predisposition and environmental contingencies" (p. 232).

Although no review dealt with ***Atypical Stereotyped Movement Disorder***, as such, the article by Schrader et al. (1983) on self-stimulation basically covered this disorder which includes behaviors such as head banging, rocking, repetitive hand movement, or other unusual but repetitive voluntary movements of the fingers, hands, or arms.

*Other Disorders with Physical Manifestations*

***Functional Enuresis*** was the only one of these disorders to be covered by a review from our pool of journals. Mountjoy, Ruben, and Bradford (1984) reviewed research on the treatment of enuresis and placed special emphasis on theory and presently available commercial devices. They briefly review psychodynamic and medical approaches to enuresis before turning greater attention to respondent and operant interventions. These writers asserted the merits of using ***intensive training packages*** in treating enuresis and they provided an extensive list of presently available devices along with their costs and suppliers. The review by Mountjoy et al. had more of an historical emphasis than a critical, systematic review of all empirical data on the treatment of bed wetting. The article probably has more value for practicing child clinicians than for clinical researchers.

***Stuttering, Functional Encopresis, Sleepwalking Disorder***, and ***Sleep Terror Disorder*** were not specifically covered by reviews covered in the present meta review.



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### *Pervasive Developmental Disorders*

Although child behavior therapists have devoted much time to developing and evaluating treatments for ***Infantile Autism***, no review of the behavioral treatment of this disorder appeared in the sources and time span searched in preparation for the present paper. Similarly, no review was discovered covering ***Childhood Onset Pervasive Developmental Disorder***. Since self-injurious behavior occurs in both of these disorders, the previously discussed review by Favell et al. (1982) has some relevance here.

### *Specific Developmental Disorders*

None of the Specific Developmental Disorders (***Reading***, ***Arithmetic***, ***Language***, or ***Articulation***) was covered by a review in the behavioral journals from 1981 through mid 1986. Some of the reviews summarized under Attention Deficit Disorder and Conduct Disorder contained information which is relevant to at least *Specific Reading Disorder* and *Specific Arithmetic Disorder*.

### *Disorders of Impulse Control Not Elsewhere Classified*

***Pyromania.*** Although it did not appear in one of the behavioral journals selected for the present review, an article by Kolko (1985) reviewed the present status of the management of firesetting in children and youth. Behavioral interventions are identified among the therapeutic procedures which are appropriate for child firesetters.

### *Parent-Child Problem*

***Child abuse.*** . Although child abuse is not identified as a diagnostic category within DSM-III, it is clearly a problem which has generated substantial social and professional concern. This concern has been most manifested among behavioral child clinicians via training programs for parents who abuse their children. Smith (1984) reviewed the published studies on such parent-training programs which have been developed in both the United States and the United Kingdom. The existing studies have focused on parents who use excessive force in dealing with their children. Sexual abuse and child neglect by parents has been ignored for the most part by child behavior therapists. Smith did not find any long-term follow-up studies on the effects of behaviorally oriented parent training programs which focus on the perpetrators of child abuse. She posed four questions to be addressed by future research: "*Which families can make use of a behavioural treatment approach*" (p. 343)? "*If parent-training techniques are to be used, what should they consist of*" (p. 343)? "*Is simple parent training sufficient to eliminate the risk of further abuse, or do other problems need to be treated as well, to ensure successful long-term outcome*" (p. 344)? "*How should treatment goals be conceptualized*" (p. 344)?

A more helpful review of behavioral interventions for child abuse was written by Isaacs (1982). She covered 8 studies which did not gather empirical data on outcome and 11 studies which did. Various forms of parent training constituted almost all of the interventions in the studies she reviewed. Isaacs listed some of the ***missing links*** in research on the behavioral management of child abuse. First, too little attention has been paid to the children in past studies on training abusive parents. Second, in those studies which have looked at both parents and children, there has been little focus on the interaction between parent and child. Third, little is known yet about what behaviors in parents and children are correlated with abusive behavior in the parents. Fourth, definitions of "abuse" need to be sharpened. Fifth, better and more comprehensive measures of outcome are needed on both the parents and the children. Sixth, investigators should determine the reliability of all of their measures. Seventh, long-term follow-up studies of abusive families are needed. Eighth, research on child abuse poses special challenges to selecting a powerful experimental design which meets ethical criteria and social sensibilities.

Although she was not dealing with child abuse, Blechman (1981) proposed a model for matching the characteristics of specific family problems with specific interventions. She questioned whether the more common behavioral interventions (i.e., contingency management, contracting, and problem-solving training) will adequately meet the full range of needs distressed families present to therapists. She suggested at least three additional approaches which would expand the impact of behavioral family therapists: (a) training in parent self-control, (b) training in parent self-sufficiency, and (c) training in marital problem-solving.

### *Psychological Factors Affecting Physical Condition*

Health psychology has been a rapidly growing area of specialization during the past decade. Pediatric psychology has an even longer history. Both health psychology and pediatric psychology have been significantly influenced by behavioral approaches to clinical child psychology. The most recent issue of the journal, *Health Psychology* (1986, Volume 5, Number 3), was a "Special Issue on Child Health Psychology."

Two recent reviews focused on behavioral approaches to health psychology. Redd and Rusch (1985) briefly reviewed, argued for, and then illustrated the use of ***behavior analytic methods*** with medical problems including those which are more or less immediately life-threatening. Somewhat on the other end of the behavioral continuum O'Leary (1985) reviewed the literature on ***self-efficacy*** and health (including smoking cessation, pain,

eating disorders, cardiac rehabilitation, and compliance with medical regimens). She concluded that perceived self-efficacy enhances how well a person does in all such health related areas and encouraged the development of procedures which provide ***performance mastery experiences*** which in turn are assumed to impact perceived self-efficacy positively.

### *Other DSM-III Disorders*

We did not find any other reviews which clearly matched existing DSM-III diagnostic categories. Among the categories which did not receive coverage since 1981 in reviews within the major behavioral journals were ***Organic Mental Disorders, Substance Use Disorders, Schizophrenic Disorders, Affective Disorders, Schizophreniform Disorder, Somatoform Disorders, Personality Disorders,*** and ***Psychosexual Disorders.***

Although much of the present review has used the diagnostic categories of DSM-III to organize the material being discussed, the next area does not fit well with such a classification system.

### *Gifted Students*

Belcastro (1985) searched the literature for articles on the application of behavioral interventions to gifted students and only found eight relevant studies. Just one of these occurred in a classroom setting. Belcastro recommended that behavioral interventions be used to target the following populations: gifted underachievers, disadvantaged gifted students, culturally different gifted children, and socially maladjusted gifted students. In general, behavioral approaches have not yet proven their benefit to gifted children.

The preceding section has presented reviews that focused on particular target behaviors or complexes of behaviors. The following section switches to a different perspective and deals with reviews which are organized around the persons who administer behavioral treatments to children.

## Mediators of Behavioral Interventions

### *Parents* [1]

Child behavior therapists have heavily involved parents and other adults from the child's natural environment as the mediators of treatment packages which are designed by the professional child clinician. Sanders and James (1983) reviewed



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the literature on generalization and maintenance following parent training programs. They concluded that very little generalization or maintenance data have been produced to date. Rios and Gutierrez (1985/86) examined the behavioral literature on parent training performed with "non-traditional families." They noted that, although various writers have suggested the need to adapt standard parent training programs to fit the unique needs and perspectives of culturally different parents, little empirical evaluation has been done to determine what adaptations have been made and how much impact they have had.

***Peers*** [2]

Kalfus (1984) critically reviewed the behavioral literature on peer-mediated intervention with children. The most common involvement of peers as therapeutic agents has been as tutors, as reinforcing agents, and as facilitators of generalization. One of the ways that peers have often been employed *indirectly* to facilitate change in target children has been to use ***group contingencies***. Pigott and Heggie (1985/86) reviewed 20 studies which directly compared the effects of individual and group contingencies. They found an interaction between treatments and target behaviors. When *academic performance* was targeted, group contingencies were usually most potent; however, when *prosocial behaviors* among group members were targeted, there was no consistent difference in the effects of individual and group contingencies.

Although they did not appear in "behavioral" journals, in addition to the preceding reviews at least two articles giving an over-view of child peers as behavior therapists have been published in the past five and a half years (Odom & Strain, 1984; Strain & Fox, 1981).

***Self-management, Self-control, and Self-regulation*** [3]

No comprehensive review of self-administered behavioral interventions in children appeared during the period surveyed nor within the journals searched; however, we did find four articles with a fairly broad perspective. Scheft and Lehr (1985) proposed a self-regulatory model which they claimed can be used to generate clinical strategies to initiate, maintain, and generalize treatment effects. The three remaining papers challenged the "self" in self-regulation labels.

Gross and Wojnilower (1984) wrote about "self-directed behavior change in children," but they focused on self-reinforcement in particular. Their review emphasized that in all studies on self-reinforcement in children there were external contingencies influencing each child's carrying out of the self-

control operations. They end their review by suggesting that child clinicians should teach children "...the fundamentals of behavior analysis in combination with practical experience in the application of the associated techniques" (p. 512).

Nelson and Hayes (1981) reviewed and critically analyzed the research on self-monitoring. They challenged the common interpretations regarding what mechanisms produce treatment effects during self-monitoring, i.e., feedback, self-evaluation, and self-administered consequences. Instead, they propose that self-monitoring is simply part of a chain of environmental cues which prompt the target behavior. Other cues in the typical chain are instructions from the therapist, training, the particular devices used to self-record behavior, and the self-monitoring behaviors.

Although they were performing experiments with college students rather than a review of self-management in children, Nelson, Hayes, Spong, Jarrett, and McKnight (1983) presented data in support of their assertion, "Self-reinforcement is effective because it cues the long-term environmental consequences that actually control the frequency of the target behavior" (p. 557).

Quite aside from theoretical arguments, Bowers, Clement, Fantuzzo, and Sorensen (1985) reviewed 17 studies which had directly compared the effects of other- and self-administered reinforcers in children. In 16 of these 17 studies the absolute trend in the measures of outcome had favored self-reinforcement. Counting the data produced by Bowers et al. in their own experiment, 17 of 18 studies produced data in which self-reinforcement produced the greater change. Their findings suggest the possible importance of distinguishing between theoretical points and clinical/practical impact.

***Professionals as Child Behavior Therapists***

Clinical child psychologists and other professional therapists who work with children have not drawn the same attention from researchers as have parents, peers, and child patients. Two important articles have appeared, however, which give special warnings to child behavior therapists. Harris and Ferrari (1983) warned practitioners about the importance of knowing developmental psychology in order to use ***normal experience*** as a reference in making judgments about children who are seen in clinical contexts. Moving in a different conceptual direction, Kazdin (1983) accused child behavior therapists of neglecting the complexity of psychiatric disorders in children and proposed that such professionals would be wise to use formal, psychiatric diagnoses to define their clinical research populations as well as to include "...such dimensions of dysfunction as severity, breadth, chronicity, onset, and contextual factors of childhood problems" (p. 73).

## Clinical Procedures

A number of additional reviews which related to child behavior therapy dealt with neither target populations nor mediators of intervention; instead, they dealt with broad categories of types of interventions.

Two papers warn behavior therapists to pay attention to ***setting events***, particularly those which relate to the child's history (Wahler & Fox, 1981; Wahler & Graves, 1983).

One review indicated the power of ***goal setting*** in regulating behavior (Locke, Shaw, Saari, & Latham, 1981), but their review did not deal with children. Lyman (1984) gave an experimental demonstration, however, of how the principles proposed by Locke et al. may well apply to children. His data suggested that *privately* set goals did not increase the on-task behavior of emotionally disturbed children, but *publicly* setting goals did have a reliable impact. The improvement in on-task behavior occurred without the administration of any tangible reinforcers. As was mentioned earlier when discussing the behavioral treatment of Attention Deficit Disorder, child behavior therapy has been heavily impacted by ***cognitive interventions***, but such treatments have not demonstrated reliable changes in hyperactive children (Abikoff, 1985). Copeland (1981) had identified the need to identify subject variables which interact with treatment operations when using "cognitive self-instructional programs" with children; however, she was not able to provide firm recommendations due to limited, relevant, empirical data. Her two major suggestions were to assess the child's cognitive maturity and internal attributions of causation; specific treatments should then be matched to where the child falls on those two dimensions.

Meador and Ollendick (1984) provided a more recent and comprehensive review of cognitive behavior therapy with children. They reported several major findings. First, the effects of cognitive interventions with hyperactive/impulsive children had been variable and sometimes contradictory. Second, such interventions had been demonstrated to change a variety of classroom behaviors in normal children; they warned that such findings might not be replicated with psychologically disturbed children. Third, the effects with some clinical problems of childhood were positive and encouraging; the problems included impulsivity, fear of the dark, frustration tolerance, problem-solving behavior, academic performance, and classroom behavior.

The major shortcomings of research on cognitive behavioral interventions with children were failure to gather long-term

follow-up data and failure to assess generalization. Other problems included too limited descriptions of the operations which defined a particular treatment, inadequate experimental designs, failure to determine what operations within a treatment package were responsible for the measured changes, not ensuring that the children actually used the operations they had been taught, the absence of systematic comparisons with the effects of the other major child behavior therapies, limiting the empirical evaluation of the effects of cognitive interventions to relatively few diagnostic categories of childhood psychopathology, and not determining which particular cognitive interventions are best suited for treating which particular problems.

Hops (1983) reviewed the empirical evidence on the effects of ***social skills training*** with children. He listed reinforcement procedures, modeling, and coaching as the primary modes of such training, but found no evidence that one of these approaches is superior to either of the others in producing long-term improvements in children with clinically significant problems in social skills. As has been true for reviewers of many other aspects of the empirical literature on child behavior therapy, Hops called for the matching of specific interventions with specific problems in social skills.

Karlan and Rusch (1982) reviewed a treatment strategy which may be the least well known of all procedures mentioned so far in the present paper. They reviewed research on ***correspondence training***. In describing correspondence training the provided the following explanation:

> Prior research efforts have used two strategies; the first strategy might be termed verbal mediation by which prior verbal statements serve to facilitate the production of subsequent behavior directly. This represents the say-do training sequence. The second strategy is more indirect; a verbal report follows the actual occurrence of the behavior and the truth value of the report is consequated in an effort to modify future occurrences of the target behavior. This forms the do-say training sequence. (p. 152)

Past research has focused primarily on producing correspondence between doing and saying; little work has been done on determining to what extent such correspondence facilitates actual setting or time generalization.

Finally, two reviews covered behavioral procedures which have been used very widely. Wilson and Lyman (1982) reviewed the literatue on the use of ***time-out*** in the treatment of childhood behavior problems. They identified many questions which should

be addressed by the clinician who is considering time-out: (a) Should the reason for the time-out be verbalized? (b) Should a warning be given that time-out is imminent? (c) Should physical methods be used to enforce the time-out? (d) Where should the time-out be located? (e) How long should time-out last? (f) Should a clear cue mark the onset and offset of time-out? (g) What schedule (as in schedules of reinforcement) of time-out will produce the best effects? (h) Should release from time-out be contingent on the presence of good behavior prior to the end of the time-out period? And (i) should the child be debriefed following the time-out session? Kazdin (1982) provided the other review on a very widely used behavioral strategy, ***the token economy***. His review did not deal exclusively with children, and will not be discussed further in the present paper.

## Evaluative Research in Child Behavior Therapy

### *Meta Analysis*

Since the publication of Smith and Glass's 1977 article on "Meta Analyses of Psychotherapy Outcome Studies," there has been a rapidly growing use of meta-analytic procedures by reviewers of the treatment outcome literature. Given the growing popularity of meta analyses, the failure of any of the reviewers cited above (with the single exception of Bowers et al., 1985) to use meta analyses on the behavioral treatment of children is striking. Perhaps this failure is a reflection of the controversy surrounding the use of meta analyses (e.g., Eysenck, 1983; Kazdin, 1985; Kendall & Maruyama, 1985; Kiesler, 1985; Michelson, 1985; Paul, 1986; Shapiro, 1985; Strube, Gardner, & Hartmann, 1985; Wilson, 1985).

Not being distracted by all of the controversy over meta analysis, Casey and Berman (1985) performed a quantitative review of 75 outcome studies with children in which some form of child therapy was compared with a control group or with another treatment. Their studies were published between 1952 and 1983. Since a preliminary analysis indicated no reliable difference between mean effect size at posttreatment versus follow-up, they based their final analyses on the first measure which was made after treatment ended. The mean effect size for ***behavioral*** therapies was 0.96 ($\underline{n}$ = 26 studies), for ***cognitive behavioral*** therapies 0.81 ($\underline{n}$ = 14 studies), for ***client centered*** therapies 0.49 ($\underline{n}$ = 20 studies), and for ***dynamic*** therapies 0.21 ($\underline{n}$ = 5 studies). Although Casey and Berman reported the differences among these effect sizes to be statistically reliable, they warned ***against*** making a strong case for the superiority of the behavioral approaches. They noted that behavioral investigators

tend to use measures of outcome which are similar to the very tasks which are employed during treatment; whereas, nonbehavioral studies are much less likely to do so. When such studies were excluded from the analyses, the mean effect size for all behavioral therapies was 0.55 ($n$ = 19 studies) and the corresponding mean for nonbehavioral therapies was 0.34 ($n$ = 25 studies). Casey and Berman did not note how the drop in mean effect sizes with this second analysis might relate to a stimulus generalization gradient; rather, they seemed to imply that these latter analyses were more valid than the former ones. In referring to their latter analyses, they concluded, "...the apparent superiority of the behavioral treatments largely disappears" (p. 392).

Although they encouraged the use of multiple measures of outcome in child therapy outcome studies, they did not seem to affirm the value of measuring changes in the treatment setting on the very behaviors which were identified as problematic when the child was referred or identified for treatment before measuring setting generalization, response generalization, or time generalization. Their discussion implies concerns with each of these forms of generalization, but no clue was given for concern about subject generalization (cf. Drabman, Hammer, & Rosenbaum, 1979).

## Issues Regarding the Marketing of Behavior Therapy

Regardless of how much better behavior therapy is than other forms of child psychotherapy, much interest has been demonstrated by behavior therapists in the marketing of their products. Stolz (1981) addressed issues of how to get innovations which are developed through applied behavior analysis adopted widely by human service organizations and providers. Three fairly recent papers have addressed marketing issues for child behavior therapy in particular. McMahon and Forehand (1983) evaluated consumer satisfaction with child behavioral treatments in terms of outcome, therapists, procedures, and teaching format and reported that satisfaction has tended to be high. Singh and Katz (1985) dealt with the attitudes of college students toward three behavioral interventions and "humanistic parenting." The four options were preferred in the following descending order: (a) differential reinforcement of incompatible behavior, (b) humanistic parenting, (c) positive practice, and (d) time out. When the investigators sampled their college students' attitudes at the end of their course, attitudes toward behavioral interventions improved. Singh and Katz concluded that attitudes toward behavioral interventions with children may be improved through appropriate education. More recently Frentz and

Kelley (1986) evaluated acceptance of five interventions by 82 mothers. The five choices were differential attention, response cost, time out, time out with spanking, and spanking alone. Time out was the most preferred intervention. Such findings suggest the importance of child behavior therapists paying attention to the preferences and biases of the adults who purchase their services.

## Conclusions

Based on the preceding data and observations, I would like to close with three conclusions. First, ***behavioral is bad!*** The time has come for psychologists to drop the use of "brand names" such as *behavioral, psychoanalytic, client-centered, gestalt*, etc. and to ***focus on problems and their solution.*** Contemporary psychological assessments and interventions should address the full range of variables which influence human behavior. These variables include setting events, immediate cues and prods, organismic variables, behavioral practice, and consequences and feedback. Although the use of brand names is bad clinical practice, the use of empirically defined treatments and measures of outcome is good.

My second conclusion is that ***direct is desirable.*** The clinician and client will be well advised to emphasize both direct measures of outcome and direct interventions. By direct measures of outcome I mean that there should be a close correspondence between the definition of the client's problem and the measures of outcome. Psychologists would learn much by studying the behavior of swimming and flight instructors. For example, if a child did not know how to swim a stroke and wanted to learn how to swim, the measures of effectiveness of intervention should be made while the child is in the water. Success cannot be assessed with the child sitting or lying on the deck of the swimming pool. Similarly, the best interventions for teaching swimming are carried out with the learner placed directly in the water. The student has to get wet in order to learn to swim.

Another example may be taken from flight training. The primary method for evaluating the effects of flight training is to observe the pilot flying in a wide range of situations. Similarly, although ground school may be taken prior to actual flight, a would-be pilot does not learn how to land an airplane by reading a book, listening to a lecture, or reflecting on landings. The student learns by practicing real landings in real airplanes.

In evaluating the effects of various treatments, psychologists should distinguish between primary treatment effects, generalization effects (setting, response, time, and subject), and maintenance effects. They should also identify what procedures produce which of these various effects.

In defining their procedures and their subjects, practitioners should pay careful attention to subject variables such as psychiatric diagnosis and developmental stage, response variables, setting variables, and time variables.

Third, my final conclusion is ***replication is required.*** There is trouble in River City! Of those psychologists who have bothered at all to evaluate the effects of their interventions with children, most have leaned heavily on statistical significance to demonstrate their treatments' adequacy. Such demonstrations are not a good match to the more common questions: ***Doctor, can you help me? Professor, can you teach me? Investigator, can you show me?*** Such questions ultimately are related to the question of replication. Carefully defined subjects, interventions, settings, and measures of outcome are all essential for meaningful replication.

Replication ratios seem to have far more relevance for answering a question such as "Doctor, can you help me?" than do tests of significance made on single investigations. In a similar vein some questions are far more functional than others. For example, asking "Is treatment ***X*** helpful?" is not so helpful, but asking "What is the best treatment for producing effect ***A*** in subject ***B*** for diagnostic category ***C*** within setting ***D*** at age ***E***?" is far better.

Theoretical explanations are no substitute for data. Well defined and executed treatment procedures and measures of outcome are essential. Investigators of the empirical effects of psychological interventions on children will be helped in gathering data relevant to determining the replicability of treatment effects by using the newer meta analytic methods for combining findings across subjects and studies.

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## Author Notes

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Copies may be obtained from the first author at 182 N. Oakland Avenue, Pasadena, CA 91101-1403.

Footnotes

[1] Copies of a table summarizing 21 studies (on the effects of employing parents or other responsible adults such as teachers to carry out behavior therapy in the natural environment) may be obtained from the first author.

[2] Copies of a table summarizing 26 articles on child peers as behavior therapists may be obtained from the first author.

[3] Copies of a table summarizing 20 representative articles on children as their own agents of change may be obtained from the first author.

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**ADDENDUM**

to

Clement, P. W., Koverola, C., Meharg, S. S., & Oncley, P. R. (1986, August). Research findings in the behavioral treatment of children. In B. L. Bonner (Chair), ***Psychotherapeutic interventions with children: State of the art.*** Symposium conducted at the meeting of the American Psychological Association, Washington, D. C.

Table 1

*Studies which Have Employed Parents or Teachers as the Agents of Change in Child Behavior Therapy*

| Author(s) (Year) | *n* | Age | Problem | Intervention | Duration | Results |
|---|---|---|---|---|---|---|
| Frederiksen & Frederiksen (1975) | 14 | 12-13 | Off task in school | Teacher- & self-determ. reinforcers | 25 weeks | Both treatments increased on task & decreased disruptive behaviors |
| Farnum, Brigham, & Johnson (1978) | 45 | c. 10 | Math performance | Teacher- vs self-admin. reinforcers | 24 weeks | S-R > T-R but not statistically reliable |
| Graziano, Mooney, Huber, & Ignasiak (1979) | 7 | 8-12 | Night-time fears | muscle relaxation training, imagery, & brave self-statements reinforced by parents | 5 weeks | Rated successful by all parents at termination, 3-mo, 6-mo, & 12-mo follow-up |
| Eyberg & Matarazzo (1980) | 29 | 4-9 | Speech & language disordered | Parents: #1 didactic group, #2 modeling, practice & feedback, #3 controls | 5 weeks | #2 mothers most satisfied; #1 & 2 improved > #3 |
| Edgar & Clement (1980) | 4 | 9-10 | Academic & behavior problems | Teacher- vs self-admin. reinforcers | 14 weeks | S-R > T-R |
| Fantuzzo & Clement (1981) | 10 | c. 7 | Academic & behavior problems | Teacher- vs self-admin. reinforcers | 4 weeks | T-R failed to produce generalization untreated students; S-R produced subject generalization |

Table 1 (continued)

| Author(s) (Year) | *n* | Age | Problem | Intervention | Duration | Results |
|---|---|---|---|---|---|---|
| Hallahan, Lloyd, Kneedler, & Marshall (1982) | 1 | 8 | Learning disabled; on task | Teacher- vs self-assessment | 6 months | S-A > T-A on math; S-A = T-A for on task |
| Bauman, Reiss, Rogers, & Bailey (1983) | 9 families | 3-8 | Inappropriate pre meal-time behavior | Parent advice package | 2-4 meals | Multiple baseline; average improvement across families = 51% |
| McGee, Krantz, Mason, & McClannahan (1983) | 2 | 5-7 | Autistic | Teacher admin. incidental-learning procedures | 30 sessions | Language skills improved |
| Murphy, Hutchison, & Bailey (1983) | 344 | 5-8 | Normal children; aggression | Teacher aides used playground games | 30 days | ABAB design; organized games reduced aggressive behavior |
| Bryant & Budd (1984) | 6 | 4-7 | Behaviorally handicapped, dev. delayed | Instructions, modeling, behavioral rehearsal, teacher prompts, & praise | 13 sessions | Multiple baseline; sharing behavior increased |
| Carter & Russell (1984) | 729 | Not stated | Learning disabled & emotionally distrd. | Teacher-admin. relaxation | 10 weeks | Pre- vs post-treatment & between groups; IQ, reading, spelling, math, & handwriting improved |
| Greenwood, Dinwiddie, et al. (1984) | 128 | 8-12 | Poor academic achievement | Teacher- vs peer mediated instructions | 12 weeks | Peer tutoring produced higher achievement, espec. w/ lowest achieving |

Table 1 (continued)

| Author(s) (Year) | *n* | Age | Problem | Intervention | Duration | Results |
|---|---|---|---|---|---|---|
| Wolfe, Mendez, & Factor (1984) | 5 | 8-12 | Excessive TV watchers | Parent-administered tokens for TV time | 3 months | Multiple baseline; reduced TV watching > 50%; reading increased for all; homework improvement varied |
| Bowers, Clement, Fantuzzo, & Sorensen (1985) | 6 | 8-11 | Attention deficit disorder | Teacher- vs self-admin. reinforcers | 49 days | Counterbalanced reversal design; both treatments increased sustained attention; S-R > T-R |
| Gettinger (1985) | 9 | 8-13 | Poor spellers | Teacher- vs student-dirctd. instructions; cues vs no cues | 16 weeks | Student-directed instructions with visual & verbal cues was most effective |
| Israel, Stolmaker, & Andrian (1985) | 33 | 3-12 | Overweight by at least 20% | #1 Weight Reduction Only, #2 (#1 + Parent Training), and #3 Wait-list Controls | 8 weeks | Both #1 & 2 lost more weight than #3; at 1 yr #2 kept weight off better than #1 |
| Odom, Hoyson, Jamieson, & Strain (1985) | 3 | 3-5 | Handicapped preschoolers | Teachers & normal peers; prompts & reinforcers | 60 sessions | Multiple baseline & changing treatments; teacher/peer interv. increased social interaction; some time generalization; teacher prompts helped maintenance |
| Henderson, Jenson, et al. (1986) | 9 | 6-15 | Poor academic achievement | Teacher-admin. reinforcers on variable intervals | 7 weeks | On task & academic achievement increased & maintained at acceptiable level |
| Kosiec, Czernicki, & McLaughlin (1986) | 54 | 9-11 | Normal classrooms | Good behavior game with & without candy reinforcers | 60 days | Game reduced inappropriate behavior in both classrooms with & without candy |

Table 1 (continued)

| Author(s) (Year) | *n* | Age | Problem | Intervention | Duration | Results |
|---|---|---|---|---|---|---|
| Odom & Strain (1986) | 3 | 4 | Autistic | Confederate peer initiations vs teacher prompts to autistic Ss | 40 sessions | Peer intervention increased targets' social responses; teacher prompts incr. social responses & initiations |

Table 2

*Studies which Have Employed Child Peers as the Agents of Change in Child Behavior Therapy*

| Author(s) (Year) | *n* | Age | Problem | Intervention | Duration | Results |
|---|---|---|---|---|---|---|
| Surratt, Ulrich, & Hawkins (1969) | 4 | 6-7 | Off task | 10-y-o gave points & response cost | c. 12 weeks | All Ss increased on task behavior; partial short-term maintenance; presence of observer cued on task |
| Bailey, Phillips, & Wolf (1971) | 2 | 12 | Articu-problem | Modeling, peer approval, contingent points, & feedback | 62 days | Articulation improved; some generalization |
| Clement (1973) | 1 | 5 | Social play & several other behaviors | 4 peers + target child took turns dispensing tokens & social social reinf. | 15 weeks | Social play in clinic increased with intervention; effects generalized to school setting |
| Solomon & Wahler (1973) | 5 | 11 | Disruptive behavior | Peer atten-tion given to desirable behaviors in targets | 47 days | Disruptive behavior decreased during phases with attention to desirable behavior |
| Greenwood, Sloane, & Baskin (1974) | 4 | 9-12 | "Manager" behavior of peer therapists | Training to manage groups of 4-6 students | c. 62 days | The 4 child Managers varied in their response to the training program; Managers & targets were in a special class |
| Robertson, DeReus, & Drabman (1976) | 18 | 2nd grade | Disruptive behavior | 2 X 2: contin-gent vs nonc. & peer vs college tutors | 49 days | No diffs. between type of tutor; contingent tutoring better than noncont. |

Table 2 (continued)

| Author(s) (Year) | *n* | Age | Problem | Intervention | Duration | Results |
|---|---|---|---|---|---|---|
| Dineen, Clark, & Risley (1977) | 3 | 9–10 | Spelling | Peer tutoring on spelling lists | 8 tutoring sessions | Both giving & receiving tutoring produced increases in correct words |
| McCarthy, Griffin, Apolloni, & Shores (1977) | 4 | "adolescents" | Arithmetic computation by inpatients | Group-oriented contingencies | Not stated | Math performance increased during group-oriented contingencies |
| Strain (1977) | 3 | 43–51 months | Social withdrawal | Social initiations by a peer confederate | 40 dys | All 3 increased in social behavior; 2 showed setting generalization |
| Strain, Shores, & Timm (1977) | 6 | 39–53 months | Low social interaction | 2 peer confederates initiated positive soc. behav. to 3 Ss each | 33 days | 5 of 6 children increased positive social behaviors |
| Ragland, Kerr, & Strain (1978) | 3 | 8–9 | Autistic children | Prompted social approaches by a child peer | 50 days | All 3 Ss increased positive social behavior; 2 Ss marginally increased neg. soc. behavior |
| Strain, Kerr, & Ragland (1979) | 4 | 9–10 | Autistic children | Normal peer made social initiations or gave prompts & social reinf. | 35 days | Both peer-mediated interventions increased positive social behavior; no generalization |
| Trovato & Bucher (1980) | 69 | 2nd–4th grade | Poor reading skills | Peer tutoring, peer tutoring + home reinf., & control | | Both oral reading accuracy & comprehension improved w/ tutoring; tutoring + reinf. was 2 X better than tutoring alone |

Table 2 (continued)

| Author(s) (Year) | *n* | Age | Problem | Intervention | Duration | Results |
|---|---|---|---|---|---|---|
| Egel, Richman, & Koegel (1981) | 4 | 5-7 | Difficulty w/ discrimination tasks | Normal peers modeled correct responses | c. 2 wks | Correct responding increased; clear evidence for temporal generalization |
| Hendrickson, Strain, Tremblay, & Shores (1982) | 6 | 4-7 | Behaviorally handicapped children | Peer initiations w/ prompts from teacher to peer | c. 32-42 dys | 2 experiments; substantial increase in positive social behavior for all Ss; a withdrawn peer could serve as an effective agent |
| Lancioni (1982) | 9 | 8-12 | Socially withdrawn retarded children | many normal peers served tutors, probers, or observers; several forms of reinforcement & modeling | 20-100 days | 3 experiments; increases in delayed imitation, cooperaplay, & positive comments; stimulus & response generalition; maintenance |
| Carden Smith & Fowler (1984) | 6 | 5-7 | Disruptive behavior during transitions | Group contingencies + response cost; teacher then peer mediators; w/ or w/o teacher feedback | c. 30 days | 2 experiments; teacher- & peer-mediated interv. decreased disruptive & increased cooperative behaviors; teacher feedback to peer mediators seemed necessary |
| Greenwood, Dinwiddie, Terry, et al. (1984) | 128 | 3rd-6th grade | Academic & achievement measures | Contingent peer tutoring compared to various teacher conditions | 11-31 wks | Classwide peer tutoring produced greatest academic responding & test scores; poorest students gained most from peer tutoring |

Table 2 (continued)

| Author(s) (Year) | *n* | Age | Problem | Intervention | Duration | Results |
|---|---|---|---|---|---|---|
| Shafer, Engel, & Neef (1984) | 4 | 5-6 | Autistic children | Peer training & peer initiation of positive interactions | 49 sessions | Peer prompting produced increased interactions; effects maintained in free-play probes; untrained peers increased interacts. w/ autistic children |
| Dougherty, Fowler, & Paine (1985) | 2 | 9-10 | Negative interacts. @ recess; mentally retarded | Token reinf. & response cost by (A) experimenter, (B) teacher, (C) peer to target, (D) self, & (E) target to a peer | | All treatments produced or maintained reduced negative interacts.; partial 1-year FU effects in 1 S but not in other S |
| Goldstein & Wickstrom (1986) | 3 | 3-4 | Language-delayed | Peer-initiated interactions w/ or w/o teacher prompts & reinforcement | 82 wks | Peer interventions increased Ss' social interactions & improvement was maintained w/o teacher involvement |
| Odom & Strain (1986) | 3 | 4 | Autistic children | Teacher prompts & peer initiations to target Ss | c. 38 sessions | Peer initiations increased social responding in Ss; teacher prompts increased both soc. responding & initiations |
| Pigott, Fantuzzo, & Clement (1986) | 12 | 10-11 | Poor performance in math | Reciprocal peer prompting & reinforcement | c. 10 wks | The reciprocal peer intervention increased math accuracy to normal levels; peer affiliation also improved |

*Note.* Odom and Strain (1984), Strain, Cooke, and Apolloni (1976), and Strain and Fox (1981) provided critical reviews of the literature on child peers as therapeutic agents.

Table 3

*Studies which Have Employed Children as Their Own Agents of Change in Child Behavior Therapy*

| Author(s) (Year) | *n* | Age | Problem | Intervention | Duration | Results |
|---|---|---|---|---|---|---|
| Bornstein & Quevillon (1976) | 3 | 4 | Overactive | Self-instruction | c. 90 days | On task behavior increased following self-instruction; gains maintained for 22 1/2 weeks |
| Reiber, Schilmoeller, & LeBlanc (1976) | 5 | 5 | Listening | Self-couning & graphic feedback | c. 30 sessions | Feedback increased attending for all Ss; self-counting maintained 83% of primary treatment effects |
| Clement, Anderson, Butman, Fantuzzo, & Mays (1978) | 8 | 10-11 | Conduct disorder | Self-observation & self-reinforcement | c. 7 mos. | Self-reinf. was more effective than self-observation; behavioral deficits changes more than excesses |
| Kendall & Finch (1978) | 20 | 10-11 | Impulsivity | Cognitive behavior therapy & control | c. 3 mos. | Cognitive behavior therapy increased latency & decreased errors on MFFT; improved teacher ratings |
| Kendall & Finch (1979) | 27 | c. 10 | Impulsivity | Cognitive behavior therapy & control | c. 3 mos. | Impulsive, treated group increased on task behavior |
| Barling (1980) | 138 | 8-11 | Vocabulary & arithmetic scores | Control (C), control + feedback (CF), self-monitoring (SM), self-determined standards & reinforcemnt (SR), & self-instuction (SI) | 2 mos. | SR condition was superior to all other conditions on both measures |

Table 3 (continued)

| Author(s) (Year) | *n* | Age | Problem | Intervention | Duration | Results |
|---|---|---|---|---|---|---|
| Noland, Arnold, & Clement (1980) | 2 | 11 | Conduct disorder | Self-reinforcement | 8 wks. | Attention and positive talk increased for both Ss; inappropriate locale did not decrease |
| Kendall & Wilcox (1981) | 33 | 8-12 | Impulsivity | Concrete cognitive behav. ther., conceptual cog. behav. ther., & atten. placebo | c. 8 wks | No change in self-report data; some treatment effects on MFFT & teacher ratings; conceptual better than concrete |
| Bornstein & Knapp (1981) | 1 | 12 | Multiple phobias | Self-control desensitization | 56 dys + 1 yr follow-up | Phobic statements & responses to fear survey decreased and maintained at follow-up |
| Kendall (1981) | 33 | 8-12 | Impulsivity | Concrete cognitive behav. ther., conceptual cog. behav. ther., & atten. placebo | 1-yr follow-up | Ss from Kendall & Wilcox (1981) had all improved from post-treatment; conceptually trained Ss had best recall |
| McLaughlin, Burgess, & Sackville-West (1981) | 6 | 10-12 | Behaviorally handicapped | Self-recording, self-recording + matching, & baseline | 110 dys | Self-recording + matching increased reading comprehens. scores for all 6 Ss; combined intervention also produced most maintenance |

Table 3 (continued)

| Author(s) (Year) | *n* | Age | Problem | Intervention | Duration | Results |
|---|---|---|---|---|---|---|
| Parrish & Erickson (1981) | 24 | 8 | Impulsivity | Scanning strategy instructions (SSI), verbal self-instructs. (VSI), SSI+VSi, & attention control (AC) | 6 sessions + 5 wk follow-up | SSI & VSI reduced impulsive cog. tempo on MFFT; generalization to academic work but not to nonacademic behavior |
| Roberts & Nelson (1981) | 3 | 8 | Under-achieving in math & off task | Self-monitoring (SM) | 35 days | SM increased on task for all 3 Ss; SM increased rate of answering math problems for 2 Ss; SM did not reliably increase correct answers |
| Beck, Matson, & Kazdin (1982) | 3 | 9-13 | Spelling deficits of psychiatric inpatients | Self-instructional training | 5-8 dys + 2-4 wk follow-up | Self-instruction enhanced spelling accuracy; effects were maintained in 2 of 3 Ss at 2 & 4 wks follow-up |
| Clement, Anderson, Arnold, Butman, Fantuzzo, & Low (1982) | 16 | 9-11 | Conduct disorder | Employment of Ss as research assistants, self-observation, & self-reinforcement | 10-52 days | All approached children accepted employment; employment by itself did not change classroom behavior; SR was 4 times as effective as SO; targeting deficits was 2 times as effective as targeting excesses |
| Kendall & Braswell (1982) | 27 | 8-12 | Impulsivity | Self-instructional training via modeling & reinforcement (A), modeling & reinforcement (B), & attention control (C) | 12 sessions + 1 yr FU | A improved teacher rating of self-contr.; A & B improved tchr. rating of hyperact.; A improved self-concept; A = B = C at 1-year follow-up |

Table 3 (continued)

| Author(s) (Year) | *n* | Age | Problem | Intervention | Duration | Results |
|---|---|---|---|---|---|---|
| Brown, Meyers, & Cohen (1984) | 27 | 4-5 | Problem-solving tasks | (A) Self-instructional or (B) skills training or (C) control | c. 9 wks | Only group A improved on MFFT & Tower of Hanoi |
| Evans & Jones (1984) | 52 | 8-10 | Math performance | Four combinations of self-reinf. conditions | 7 sessions | Stringent instructions + criterion setting + tangible reward was most effective |
| McLaughlin (1984) | 12 | Elementary school | Special education | Self-recording (SO), self-recording + back-ups (SR), & control (C) | 6 months | Both SO & SR improved on task & academic responding; SO = SR on these 2 measures; effects were maintained for c. 6 months |
| Tiedemann & McMahon (1985) | 60 | 8 & 11 | Arithmetic | Self-reinforcement (SR), external reinforcement (ER), & control | Not clear; 1 day? | Boys performed best on SR; girls did equally well on SR & ER; child satisfaction & locus of control scores were not related to performance |

*Note.* The articles summarized above represent only a sample of articles published during the past 10 years on self-regulation in children.

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